

Claims

1. A process for producing crystalline 1,2-polybutadiene, which is characterized in that 1,3-butadiene is polymerized in a hydrocarbon solvent using a catalyst system comprising (A) a cobalt salt, (B1) a phosphine compound having one branched aliphatic group of 3 or more carbon atoms or one alicyclic group of 5 or more carbon atoms and two aromatic groups, and (C) an organic aluminum compound.

2. The process for producing crystalline 1,2-polybutadiene according to claim 1, wherein the catalyst system comprises a phosphine complex of a cobalt salt obtained by mixing component (A) and component (B1), and component (C).

3. The process for producing crystalline 1,2-polybutadiene according to claim 1 or 2, wherein component (A) is at least one selected from the group consisting of cobalt chloride, cobalt bromide, cobalt octylate, cobalt versatate and cobalt naphthenate.

4. The process for producing crystalline 1,2-polybutadiene according to claim 1 or 2, wherein component (B1) is diphenylcyclohexylphosphine.

5. The process for producing crystalline 1,2-polybutadiene according to any one of claims 1 to 4, wherein the use ratio of component (B1) to mol of component (A) is from 1 to 5 mol.

6. The process for producing crystalline 1,2-polybutadiene according to any one of claims 1 to 5, wherein the amount of component (C) used is within

the range of 500 to 4,000 by the molar ratio of 1,3-butadiene and the aluminum atom in component (C) (1,3-butadiene/Al).

7. The process for producing crystalline 1,2-polybutadiene according to any one of claims 1 to 7, wherein the hydrocarbon solvent is cyclohexane and/or methylene chloride.

8. The process for producing crystalline 1,2-polybutadiene according to any one of claims 1 to 7, wherein the polymerization temperature is from -20°C to +120°C.

9. The process for producing crystalline 1,2-polybutadiene according to any one of claims 1 to 8, wherein the crystallinity of the resulting 1,2-polybutadiene is from 5 to 40%.

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)